Industrial Combustion Coordinated Rulemaking

Pollution Prevention Subgroup

At the April 28 - 29, 1998 meeting of the Industrial Combustion Coordinated Rulemaking (ICCR) Federal Advisory Committee (a.k.a. ICCR Coordinating Committee) the Committee directed the Pollution Prevention (P2) Subgroup to complete several "works in progress" by Friday, May 15, and post them to the TTN. In effect, the Committee empowered the P2 Subgroup to complete these materials and forward them to the ICCR Source Work Groups from the Committee for consideration by the SourceWork Groups.

Attached are the completed materials. As with other guidance forwarded to the Source Work Groups by the Committee, the Committee urges each Source Work Group to consider the attached guidance in evaluating various alternatives. Examples listed are intended to indicate the range of possibile considerations, which are dependent on the specific type of equipment utilized and the fuel/waste input to the combustion device. All examples are not considered applicable to all combustion sources. The source work groups are asked to evaluate techniques, practices, and possible standard approaches appropriate for subcategories or other subsets of sources.

Finally, in some cases specific examples or language is included. This is not intended to imply that the Source Work Groups should incorporate these examples or this language verbatim. The Source Work Groups should determine what specific alternatives are applicable for their source category or subcatergories.

<u>P2 Subgroup Members</u>

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FUEL/WASTE CONSTITUENT LIMITS

Introduction

Establishing a limit on fuel/waste constituents as an alternative to end-of-pipe emissions limits would encourage emission reduction by reducing pollutants in the fuels and wastes. Fuel and waste constituent limits are very useful in certain situations and not so useful in others. Their practicality is limited to certain constituents, such as metals, ash content, organic chlorine compounds and organic fluorine compounds. Also relevant is the physical form (solid, liquid, gas) of the fuel/waste.

Applicability Considerations

Following are several suggestions with respect to the usefulness of constituent limits for various scenarios.

1. Liquid Waste - Setting constituent limits which provide for the measurement of certain substances in liquid waste may be a viable alternative to measuring stack emissions for combustion units.

2. Liquid Fuel - Setting constituent limits for commercial liquid fuels is also possible, but requires evaluation of the consequences on the commercial fuel markets. Sulfur in fuel oil and benzene in gasoline are examples where this has been successfully implemented.

3. Natural Gas - Setting constituent limits on the composition of pipeline natural gas is probably not needed given the low potential for HAP emissions. However, setting a limit on the mercury content of field gas burned directly could be useful to ensure mercury removal from gas fields known to have elevated mercury content.

4. Other Gases - Setting constituent limits for combustion of certain other gaseous materials may be useful to encourage reductions in the concentration of species such as mercury and halogenated compounds.

5. Solid Materials - Setting HAP constituent limits for solid waste or solid fuels is not likely to be useful because of the difficulty in sampling solid materials and correlating the HAP constituents in the waste/fuel to the stack emissions, because of the removal of some of the HAPs in the bottom ash and in the air pollution control devices commonly used for solid material combustion. An exception to this may be the combustion of homogeneous solid materials which contain chlorine and fluorine in combustion units without acid gas removal.

Regulatory Approach

Emissions of inorganic hazardous air pollutants, for example halogen acids and heavy metals, are related to the amount of certain elements in the fuel/waste being combusted, for example chlorine, fluorine, mercury, lead, arsenic, etc. Fuel/waste constituent limits could be developed for certain materials, such as mercury and organic chlorine, which are directly related to stack HAP emissions, or for other parameters, such as ash content, which is indirectly related to stack HAP emissions.

MACT limits can be established to allow measurement of these constituents in the material being burned as an alternative to measuring emission of such HAP's in the stack. The application of fuel/waste constituent limits is most applicable to liquids and gases, burned in combustion units without add-on air pollution control. However, the same constituent limits for uncontrolled units could also be a voluntary alternative to an emission limit for controlled units since, even lower emissions would result with add-on control.

Selected regulatory approach(es) could include the following considerations:

> Maximum concentrations of substances in fuel/waste can be specified, along with appropriate sampling, analytical, and other procedures, for certain fuel/waste burning scenarios. These concentrations could either serve as alternatives to MACT stack limitations or surrogates for stack emission limits for certain HAPs.
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> In cases where virtually all the HAPs are emitted because of the absence of add-on air pollution control, these fuel/waste constituent limits could serve as alternatives to MACT emission limits.
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> In cases where there are add-on control devices which reduce HAP emissions, or a significant amount of the HAP constituent enters the bottom ash, the fuel/waste constituent limits would need to be related to a stack emission limit, probably on a case-by-case basis to justify a higher constituent level than for situations without add-on control for the HAP. The efficiency of control could be considered to allow higher feed concentrations of such HAPs as a way to demonstrate compliance with a stack emission limit.

Measurement

Fuel/waste constituent sampling, analytical and other procedures would need to be specified. For example, a waste liquid constituent standard to limit the emissions of hydrochloric acid would require the specification of a test method for organic chlorine in the liquid. Either composite sampling and analysis, or periodic sampling and analysis of each sample, could be specified. Commercial fuel supplier analysis and certification could also be considered.

Pollution Prevention Aspects

Pollution prevention would be encouraged by setting HAP constituent limits on fuels/waste because persons may use pollution prevention to get below those limits, rather than use add-on control to meet a stack emission limit.

EXAMPLE - Concentration limit for organic chlorine in liquid waste solvents burned in combustion units without acid gas control apparatus - A maximum concentration limit for organic chlorine can be based in part on the 1000 ppmw trigger in hazardous waste rules for waste solvents to be presumed free of hazardous chlorinated wastes. This results in about 60 ppmv of hydrochloric acid being emitted from the stack if there is no acid gas scrubber. This is in the same range as the hydrochloric acid limit of 30 ppmv, which has been demonstrated achievable, and which is included in the municipal waste combustion regulations adopted by EPA. A 1000 ppmw organic chlorine level for waste solvents may therefore be a reasonable constituent limit to be used as an alternative to demonstrating compliance with a stack emission limit and stack test program for hydrochloric acid emission.

Fuel/Waste De MINIMIS Constituent Levels

Introduction

Setting de minimis constituent levels for fuels and wastes can also promote source reduction by encouraging the reduction of hazardous air pollutant (HAP) constituents in fuels/wastes. Unlike "Fuel/Waste Constituent Limits", also discussed in this document in section 3.3, a de minimis constituent level could be a trigger for less oversight or to determine when certain aspects of the regulation would not apply. De minimis constituent levels can be used in addition to stack emission limits or fuel/waste constituent limits. De minimis levels should be significantly below emission or fuel/waste limits and should be levels clearly de minimis in nature, such that reduced oversight is warranted. The usefulness of de minimis constituent levels are governed by the same factors as discussed in the "Fuel/Waste Constituent Limits" discussion.

There can be more than one de minimis level to achieve different purposes. For example, one constituent level might be used for reduced frequency of analysis, and another constituent level might be used for exemption from any analysis of a particular constituent. Rather than de minimis levels, these could be referred to with other terminology, for example "analysis level 1" and "analysis level 2" to better describe the application of this concept. The workgroups should select appropriate terminology when applying the de minimis concept.

Also, the de minimis concept is relevant to other than constituent levels (i.e., ppmw) in fuels and wastes. It could be applied to emission levels from the stack, either as emission rates (i.e., lb./hr. or lb./yr.) or emission concentrations (i.e., ppmv or ug/m3). Here again, other nomenclature could be used in place of de minimis to better describe how such applicability levels are used.

Applicability Considerations

De minimis constituent levels can be used in several areas:

1. Reduced monitoring, recordkeeping and reporting - Where a waste/fuel has been demonstrated to be consistently below (and is reasonably anticipated to remain below) a specified de minimis level, then the frequency of monitoring and the associated recordkeeping and reporting can be significantly reduced for certain HAPs. In such cases quarterly or annual analysis of the waste/fuel or commercial fuel supplier analysis and certification could be sufficient to confirm continuing de minimis constituent levels.

2. Exemption from stack testing - Where the fuel/waste constituent levels are below de minimis, testing for the associated HAP emissions from the stack might be reduced or not be required.

3. Exemption from pollution prevention evaluation - If pollution prevention evaluation is required as part of the rules to minimize certain HAP emissions, such evaluation might not be required if the HAP constituents in the waste/fuel are

below de minimis levels.

4. Exemption from other portions of regulation - Where the fuel/waste constituent levels are below de minimis, the fuel/waste might be exempted from other appropriate aspects of MACT regulation for the de minimis HAP constituents.

Regulatory Approach

Emissions of inorganic HAPs, such as halogen acids and heavy metals, are related to the amount of certain elements in the fuel/waste being combusted, like chlorine, fluorine, mercury, lead, arsenic, etc. Therefore, for certain combustion scenarios, levels can be specified for the concentration of such substances in the material(s) being burned to act as de minimis triggers for less monitoring, or exemption from pollution prevention evaluation, or exemption from other aspects of regulation. In effect, such levels would represent levels where emissions of HAPs are already minimized, even if all the HAPs in the fuel/waste were emitted.

De minimis concentrations of substances in fuel/waste can be specified, along with appropriate sampling, analytical, and averaging procedures. Unlike "Fuel/Waste Constituent Limits," de minimis levels could be for both controlled and uncontrolled combustion scenarios, assuming that all the HAPs in the fuel/waste are emitted. Provisions for use of commercial fuel supplier analysis and certification could also be specified.

Some additional considerations may include, as applicable:

a. For constituents which exceed the de minimis levels and there is no air pollution control technique for the HAPs which would be emitted from those constituents, then monitoring the fuel/waste at increased frequency may be appropriate.

b. For constituents which exceed the de minimis levels and air pollution control is present to remove some of the HAPs, then there may need to be appropriate monitoring of the control device to ensure that the removal efficiency is as claimed.

Measurement

Same as "Fuel/Waste Constituent Limits".

Pollution Prevention Aspects

Pollution prevention would be encouraged by setting HAP constituent de minimis levels on fuels/waste because persons may use pollution prevention, supplier specifications, quality control and/or other techniques to get below those levels, and benefit from reduced oversight, including less source evaluation, monitoring, recordkeeping and reporting.

EXAMPLE - A fraction of a "fuel/waste constituent limit" could be specified as de minimis -

For example, if 1000 ppmw organic chlorine is selected as a fuel/waste constituent limit, then 100 ppmw organic chlorine (10% of limit) may be an appropriate de minimis level for reduced periodic analysis of the waste. Also, 10 ppmw organic chlorine (1% of limit) in initial samples could be specified as a de minimis level for no periodic monitoring of organic chlorine. Generally, de minimis levels in the range of 1 to 10% of a level requiring control measures are traditionally acceptable levels of insignificance.

(**NOTE**: The above example does not represent consensus on the levels for limits or de minimis. The levels in the example are used to show how the de minimis concept might be applied, but are not recommended levels. Also, there need not be an emission or constituent limit in order to develop de minimis levels. Specifying constituent levels for triggering analysis or other requirements, or varying the frequency of analysis, can be considered absent emission or constituent limitations).